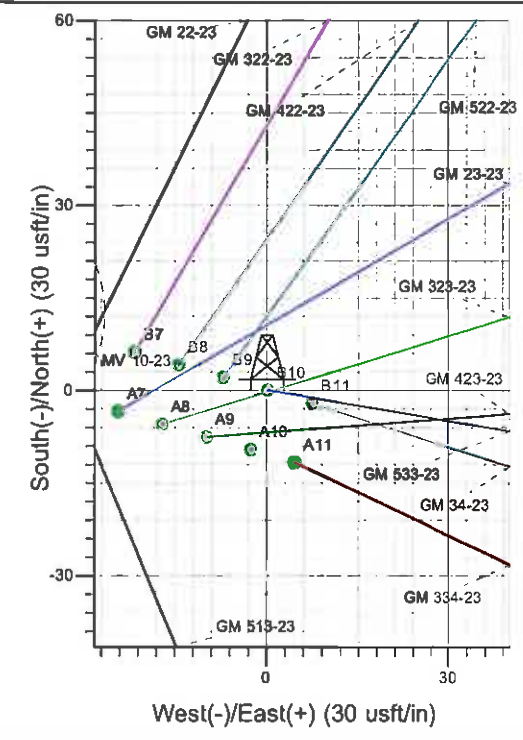
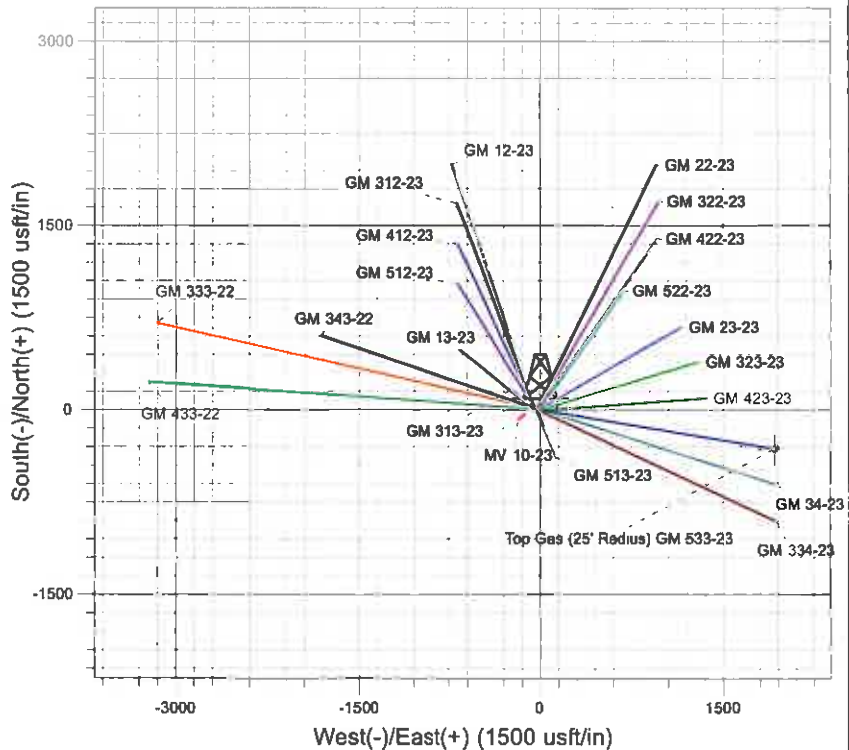
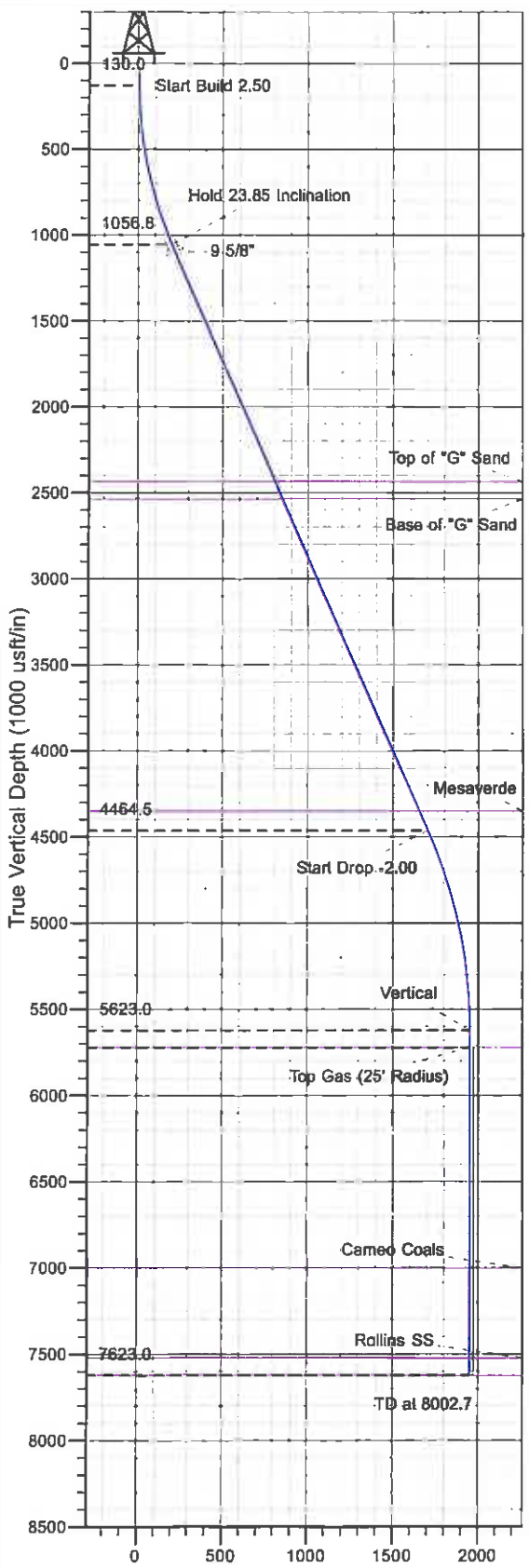




Well Name: GM 533-23  
 Surface Location: MV 10-23 Pad  
 North American Datum 1983 , US State Plane 1983 , Colorado Central Zone  
 Ground Elevation: 5976.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1619643.41	2271265.83	39° 30' 22.522 N	108° 4' 58.988 W	B10

KELLY BUSHING @ 6002.0usft (Nabors 576 (26' RKB) kjs)



Project: GV 23-06S-096W  
 Site: MV 10-23 Pad  
 Well: GM 533-23  
 Design #1 04Oct10 kjs

**M** Azimuths to True North  
 Magnetic North: 10.48°  
 Magnetic Field  
 Strength: 52314.4snT  
 Dip Angle: 65.75°  
 Date: 10/4/2010  
 Model: IGRF2010

ANNOTATIONS

TVD	MD	Inc	Azi	+N/-S	+E/-W	VSec	Departure	Annotation
130.0	130.0	0.00	0.00	0.0	0.0	0.0	0.0	Start Build 2.50
1056.8	1084.1	23.85	99.39	-31.9	193.1	195.8	195.8	Hold 23.85 Inclination
4464.5	4810.1	23.85	99.39	-277.6	1679.7	1702.5	1702.5	Start Drop -2.00
5623.0	6002.7	0.00	0.00	-317.5	1921.1	1947.2	1947.2	Vertical
5723.0	6102.7	0.00	0.00	-317.5	1921.1	1947.2	1947.2	Top Gas
7623.0	8002.7	0.00	0.00	-317.5	1921.1	1947.2	1947.2	TD at 8002.7

Vertical Section at 99.39° (1000 usft/in)

# **PICEANCE VLY NAD 83**

**GV 23-06S-096W**

**MV 10-23 Pad**

**GM 533-23 - Slot B10**

**Wellbore #1**

**Plan: Design #1 04Oct10 kjs**

## **Standard Planning Report - Geographic**

**09 February, 2011**

**Williams**  
Planning Report - Geographic

<b>Database:</b>	Compass R5000 WIN AUTH	<b>Local Co-ordinate Reference:</b>	Well GM 533-23 - Slot B10
<b>Company:</b>	PICEANCE VLY NAD 83	<b>TVD Reference:</b>	KELLY BUSHING @ 6002.0usft (Nabors 576 (26' RKB) kjs)
<b>Project:</b>	GV 23-06S-096W	<b>MD Reference:</b>	KELLY BUSHING @ 6002.0usft (Nabors 576 (26' RKB) kjs)
<b>Site:</b>	MV 10-23 Pad	<b>North Reference:</b>	True
<b>Well:</b>	GM 533-23	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #1 04Oct10 kjs		

<b>Project</b>	GV 23-06S-096W, Garfield County, CO, 23-06S-096W		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	Colorado Central Zone		Using geodetic scale factor

<b>Site</b>	MV 10-23 Pad				
<b>Site Position:</b>		<b>Northing:</b>	1,619,663.89 usft	<b>Latitude:</b>	39° 30' 22.707 N
<b>From:</b>	Map	<b>Easting:</b>	2,271,201.54 usft	<b>Longitude:</b>	108° 4' 59.816 W
<b>Position Uncertainty:</b>	0.0 usft	<b>Slot Radius:</b>	13.200 in	<b>Grid Convergence:</b>	-1.629 °

<b>Well</b>	GM 533-23 - Slot B10					
<b>Well Position</b>	<b>+N/-S</b>	0.0 usft	<b>Northing:</b>	1,619,643.41 usft	<b>Latitude:</b>	39° 30' 22.522 N
	<b>+E/-W</b>	0.0 usft	<b>Easting:</b>	2,271,265.83 usft	<b>Longitude:</b>	108° 4' 58.988 W
<b>Position Uncertainty</b>		0.0 usft	<b>Wellhead Elevation:</b>		<b>Ground Level:</b>	5,976.0 usft

<b>Wellbore</b>	Wellbore #1				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2010	10/4/2010	10.482	65.750	52,314

<b>Design</b>	Design #1 04Oct10 kjs			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PLAN	<b>Tie On Depth:</b>	0.0
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>
	0.0	0.0	0.0	89.39

<b>Plan Sections</b>										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFD (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.000	
130.0	0.00	0.00	130.0	0.0	0.0	0.00	0.00	0.00	0.000	
1,084.1	23.85	89.39	1,056.8	-31.9	193.1	2.50	2.50	0.00	99.385	
4,810.1	23.85	89.39	4,464.5	-277.6	1,679.7	0.00	0.00	0.00	0.000	
6,002.7	0.00	0.00	5,623.0	-317.5	1,921.1	2.00	-2.00	0.00	180.000	
6,102.7	0.00	0.00	5,723.0	-317.5	1,921.1	0.00	0.00	0.00	0.000	Top Gas (25' Radius)
8,002.7	0.00	0.00	7,623.0	-317.5	1,921.1	0.00	0.00	0.00	0.000	

**Williams**  
**Planning Report - Geographic**

<b>Database:</b>	Compass R5000 WIN AUTH	<b>Local Co-ordinate Reference:</b>	Well GM 533-23 - Slot B10
<b>Company:</b>	PICEANCE VLY NAD 83	<b>TVD Reference:</b>	KELLY BUSHING @ 6002.0usft (Nabors 576 (26' RKB) kjs)
<b>Project:</b>	GV 23-06S-096W	<b>MD Reference:</b>	KELLY BUSHING @ 6002.0usft (Nabors 576 (26' RKB) kjs)
<b>Site:</b>	MV 10-23 Pad	<b>North Reference:</b>	True
<b>Well:</b>	GM 533-23	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #1 04Oct10 kjs		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
0.0	0.00	0.00	0.0	0.0	0.0	1,619,643.41	2,271,265.83	39° 30' 22.522 N	108° 4' 58.988 W	
130.0	0.00	0.00	130.0	0.0	0.0	1,619,643.41	2,271,265.83	39° 30' 22.522 N	108° 4' 58.988 W	
<b>Start Build 2.50</b>										
1,084.1	23.85	99.39	1,056.8	-31.9	193.1	1,619,606.01	2,271,457.98	39° 30' 22.207 N	108° 4' 56.524 W	
<b>Hold 23.85 Inclination</b>										
1,134.0	23.85	99.39	1,102.4	-35.2	213.0	1,619,602.15	2,271,477.77	39° 30' 22.174 N	108° 4' 56.270 W	
<b>9 5/8"</b>										
2,592.1	23.85	99.39	2,436.0	-131.4	794.8	1,619,489.50	2,272,056.55	39° 30' 21.224 N	108° 4' 48.848 W	
<b>Top of "G" Sand</b>										
2,701.5	23.85	99.39	2,536.0	-138.6	838.4	1,619,481.05	2,272,099.95	39° 30' 21.153 N	108° 4' 48.292 W	
<b>Base of "G" Sand</b>										
4,687.1	23.85	99.39	4,352.0	-269.5	1,630.7	1,619,327.65	2,272,888.10	39° 30' 19.858 N	108° 4' 38.184 W	
<b>Mesaverde</b>										
4,810.1	23.85	99.39	4,464.5	-277.6	1,679.7	1,619,318.15	2,272,936.92	39° 30' 19.778 N	108° 4' 37.558 W	
<b>Start Drop -2.00</b>										
6,002.7	0.00	0.00	5,623.0	-317.5	1,921.1	1,619,271.40	2,273,177.10	39° 30' 19.384 N	108° 4' 34.478 W	
<b>Vertical</b>										
6,102.7	0.00	0.00	5,723.0	-317.5	1,921.1	1,619,271.40	2,273,177.10	39° 30' 19.384 N	108° 4' 34.478 W	
<b>Top Gas - Approx. Top Gas</b>										
7,380.7	0.00	0.00	7,001.0	-317.5	1,921.1	1,619,271.40	2,273,177.10	39° 30' 19.384 N	108° 4' 34.478 W	
<b>Carneo Coals</b>										
7,902.7	0.00	0.00	7,523.0	-317.5	1,921.1	1,619,271.40	2,273,177.10	39° 30' 19.384 N	108° 4' 34.478 W	
<b>Rolline SS</b>										
8,002.7	0.00	0.00	7,623.0	-317.5	1,921.1	1,619,271.40	2,273,177.10	39° 30' 19.384 N	108° 4' 34.478 W	
<b>TD at 8002.7 - TD</b>										

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
Top Gas (25' Radius) GI - hit/miss target - Shape - plan hits target center - Circle (radius 25.0)	0.00	0.00	5,723.0	-317.5	1,921.1	1,619,271.40	2,273,177.10	39° 30' 19.384 N	108° 4' 34.478 W	

Casing Points						
Measured Depth (usft)	Vertical Depth (usft)		Name	Casing Diameter (in)	Hole Diameter (in)	
1,134.0	1,102.4	9 5/8"		9.625	12.250	

**Williams**  
 Planning Report - Geographic

<b>Database:</b>	Compass R5000 WIN AUTH	<b>Local Co-ordinate Reference:</b>	Well GM 533-23 - Slot B10
<b>Company:</b>	PICEANCE VLY NAD 83	<b>TVD Reference:</b>	KELLY BUSHING @ 6002.0usft (Nabors 576 (26' RKB) kjs)
<b>Project:</b>	GV 23-06S-096W	<b>MD Reference:</b>	KELLY BUSHING @ 6002.0usft (Nabors 576 (26' RKB) kjs)
<b>Site:</b>	MV 10-23 Pad	<b>North Reference:</b>	True
<b>Well:</b>	GM 533-23	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #1 04Oct10 kjs		

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (")	Dip Direction (")	
2,592.1	2,436.0	Top of "G" Sand				
2,701.5	2,536.0	Base of "G" Sand				
4,687.1	4,352.0	Mesaverde				
6,102.7	5,723.0	Approx. Top Gas				
7,380.7	7,001.0	Cameo Coals				
7,902.7	7,523.0	Rollins SS				
8,002.7	7,623.0	TD				

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
130.0	130.0	0.0	0.0	Start Build 2.50	
1,084.1	1,056.8	-31.9	193.1	Hold 23.85 Inclination	
4,810.1	4,464.5	-277.6	1,679.7	Start Drop -2.00	
6,002.7	5,623.0	-317.5	1,921.1	Vertical	
6,102.7	5,723.0	-317.5	1,921.1	Top Gas	
8,002.7	7,623.0	-317.5	1,921.1	TD at 8002.7	